A Comparative Analysis of Water Quality Monitoring Programs in the Southeast: Lessons for Tennessee

Principal Investigators

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TN Water Resources Research Center

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Research Goals

- Provide **relevant and practical recommendations** to Tennessee policy makers and other stakeholders regarding the potential establishment of a statewide volunteer monitoring program

- Use these recommendations **as a basis for an earnest dialogue** among Tennessee stakeholders about the viability of initiating, structuring, and implementing such a program

Research Approach

- Literature review

- Compare & contrast three Southeastern statewide volunteer monitoring programs
  - Administrative & programmatic structure
  - Evolution & lessons learned
  - Volunteer perceptions of benefits & limitations of volunteer monitoring

- Identify Tennessee stakeholders' perceptions of benefits & limitations of volunteer monitoring & potential for initiating statewide program

Research Methods

Program Case Studies

- Criteria for inclusion: Contiguous to Tennessee, conducted statewide, operational for at least five years, & partially state supported

- Analysis of websites

- Face-to-face interviews with Program Managers/Staff

- Review of program documents

Research Methods

Survey of AL, GA, & KY Volunteers

- Volunteer databases: adults, telephone #s & addresses

- Phone interview

- Sample size (response rate), confidence level
    - AWW: 269 (82%); margin of error - +/- 5.2 at 95% confidence level
    - GA AAS: 127 (73%); margin of error is +/- 5.7 at 95% confidence level
    - KY Water Watch (Watershed Watch): 361 (83%); margin of error is +/- 2.7 @ 95% confidence level

Research Methods

Tennessee
Water Resources
Research Center

Volunteer Water
Monitoring Survey
for Tennessee
Stakeholders

TN Water Resources Research Center
University of Tennessee
311 Conference Center
Knoxville, TN 37996
(865) 974-2151, phone   (865) 974-1838, fax

Tennessee Stakeholder Survey Sample

- Intended to obtain an indication of stakeholder perceptions, not statistically valid

- Written & on-line survey: Targeted water resources conference attendees, watershed and advocacy groups

- Response: 159 surveys completed

Initiate a Tennessee Volunteer Monitoring Program

Overarching Recommendation

Literature

- National trend – increasing credibility
- Benefits – state & local governments

Case Studies
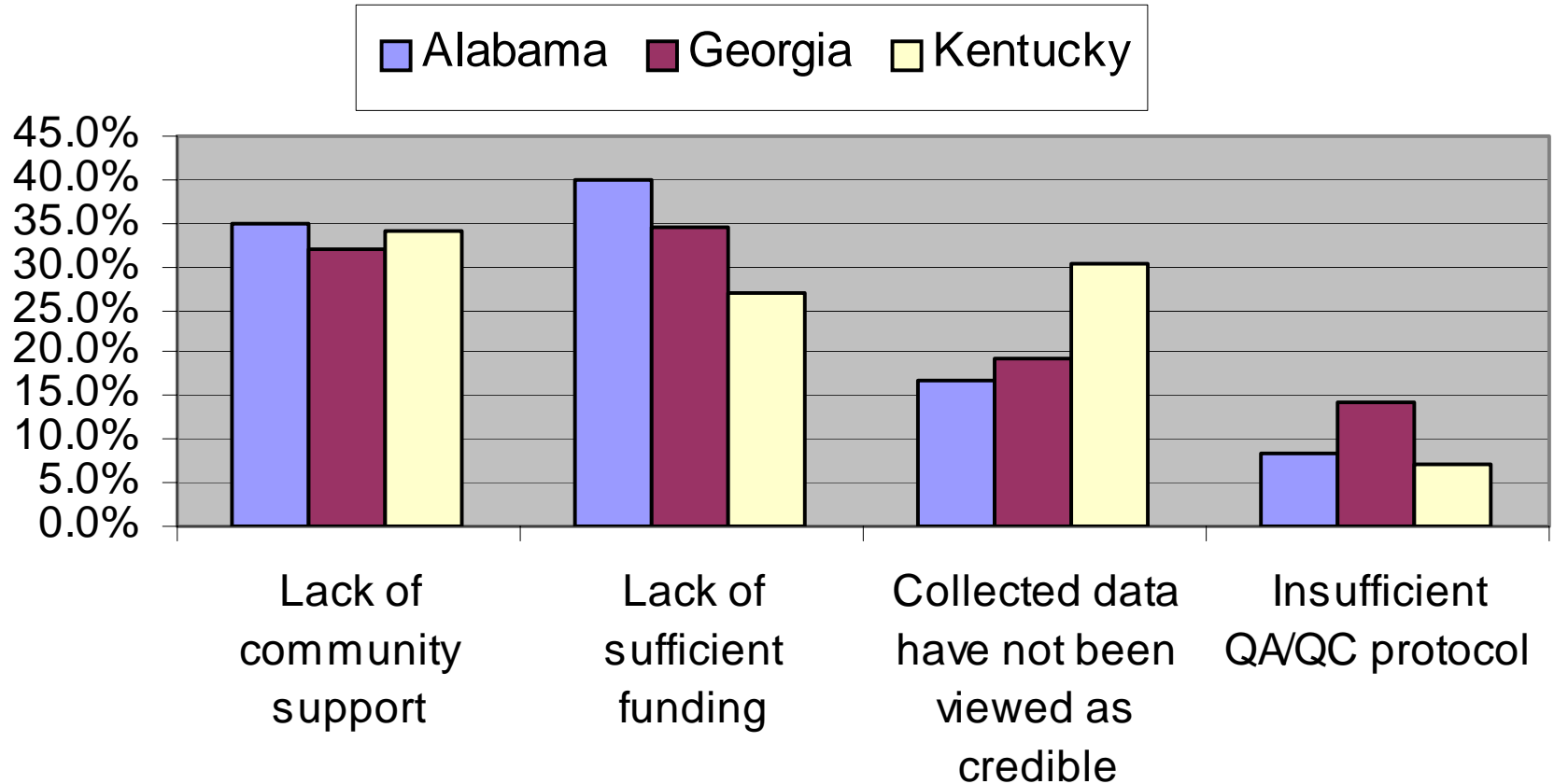
- Programs' long-term viability & positive outcomes

Surveys – Volunteer Perceptions

- Even in the face of major challenges…
- Benefits of volunteer monitoring outweigh its limitations
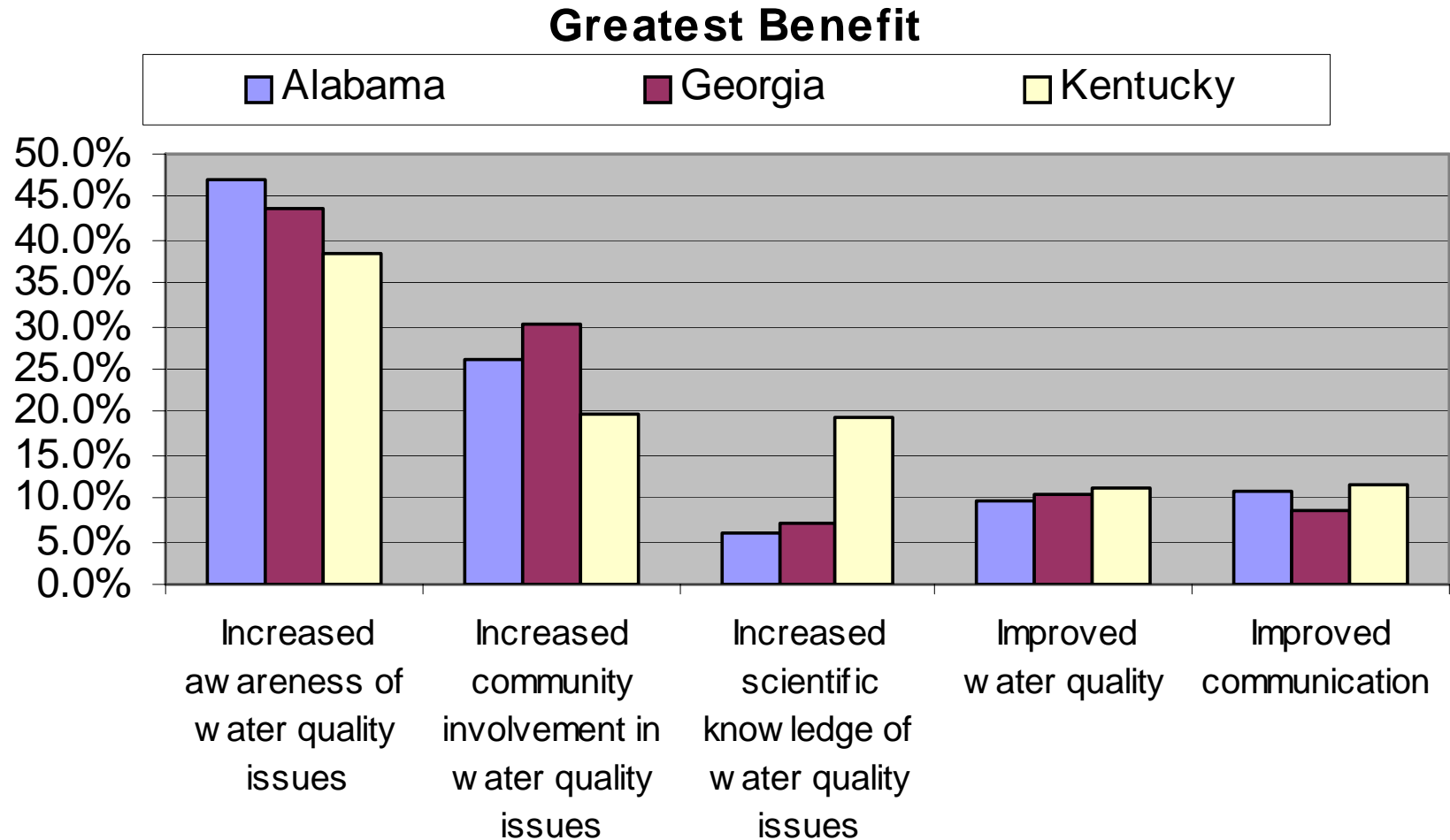
AL, GA, & KY Volunteer Perceptions
Primary Barriers

Greatest Limitation

Legend: ☐ Alabama ☐ Georgia ☐ Kentucky

AL, GA, & KY Volunteer Perceptions
Primary Benefits

Greatest Benefit

AL, GA, & KY Volunteer Perceptions
Benefits outweigh Costs

Tennessee Stakeholder Perceptions
Benefits outweigh Costs

Perceived Benefits
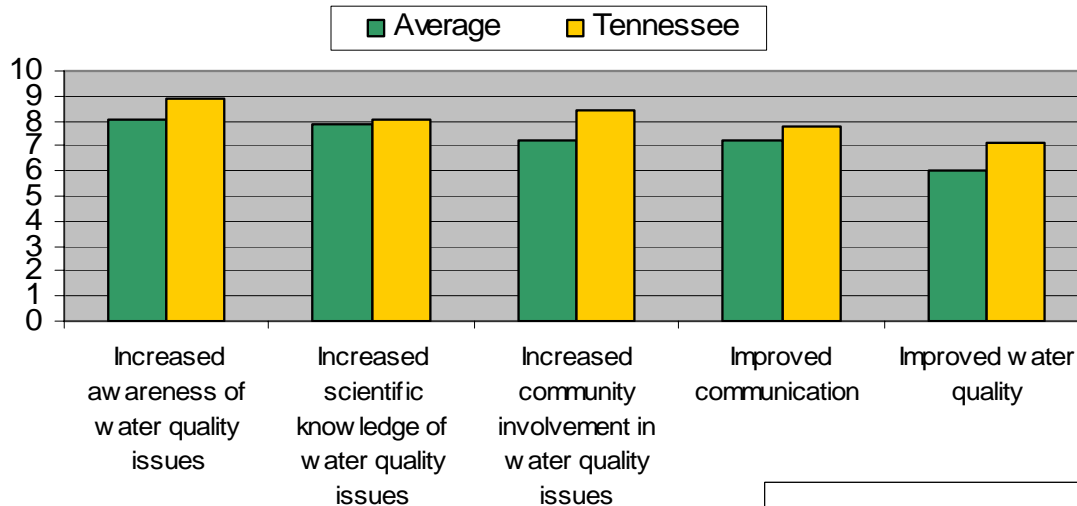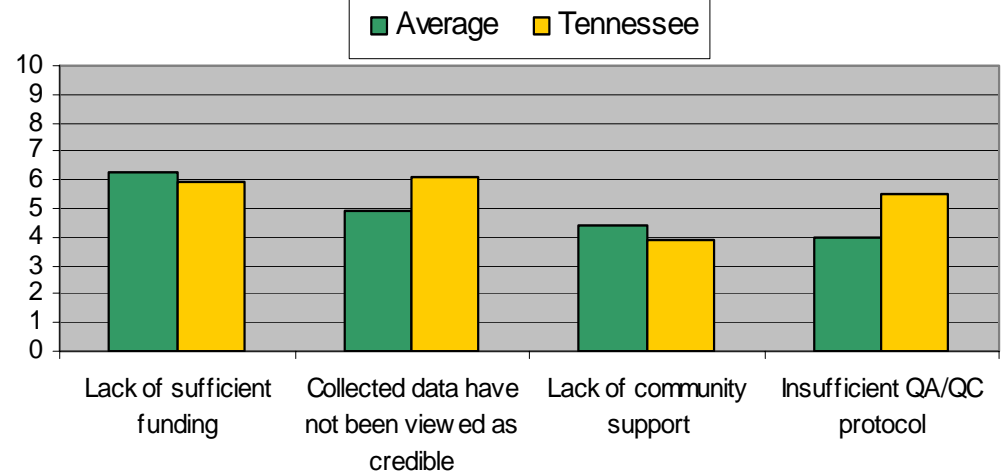
- Average
- Tennessee

Categories: Increased awareness of water quality issues; Increased scientific knowledge of water quality issues; Increased community involvement in water quality issues; Improved communication; Improved water quality

Perceived Limitations

- Average
- Tennessee

Categories: Lack of sufficient funding; Collected data have not been viewed as credible; Lack of community support; Insufficient QA/QC protocol

Recommendations by Topic & Category

Structure	Programmatic Elements	Long-term Viability
Delivery System	Mission/Goals	Funding
Housing	Volunteer Support System	QA/QC
Membership/ Recruitment	Information Management	Volunteer Retention
Advisory Board	Outreach Strategies	

Recommendation: Structure

Administer by local organizations but also be able to serve volunteers directly when no local oversight organization is in place.

Primary Basis: Tennessee Survey

State Program

State Program
Volunteer	Volunteer	Volunteer

State Program (with Local Organizations)

State Program
Local Organization	Local Organization	Local Organization
Volunteers	Volunteers	Volunteers

Program Model Preference

- Neither 1%
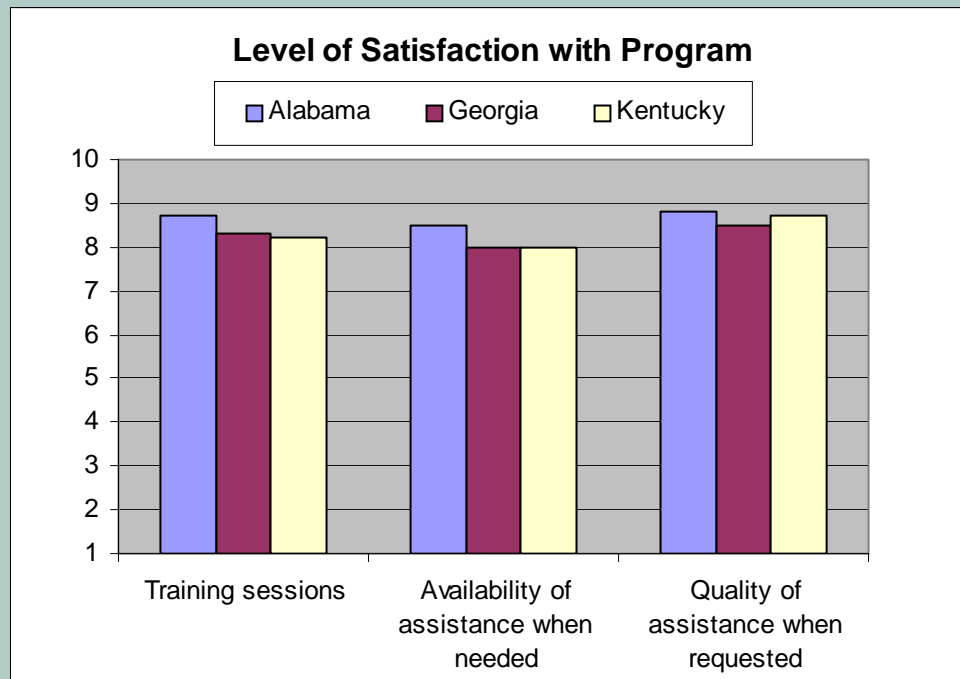- Unsure 10%
- Model 1 8%
- Model 2 81%
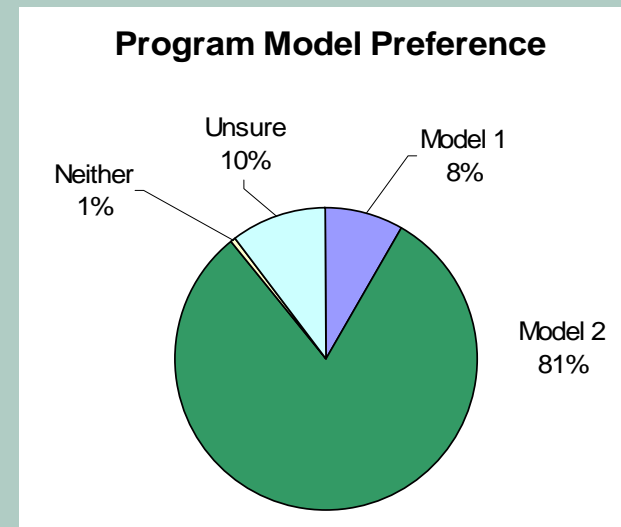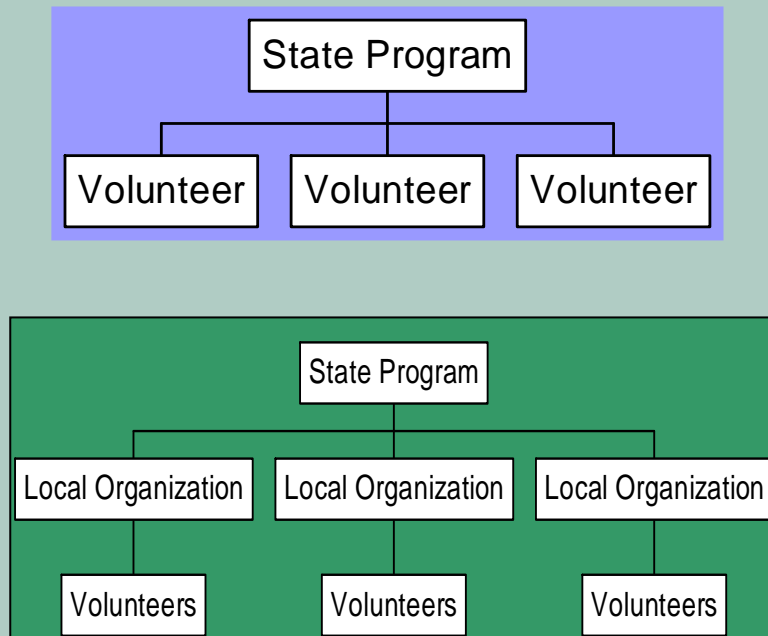
Structure: Related Survey Finding

***Case studies*:**

- Each of the three programs – hybrid of two structures
  - Alabama – Direct support from state office
  - Georgia – More locally administered
- Differing structures did not appear to affect volunteer level of satisfaction with support

Level of Satisfaction with Program

Legend: Alabama, Georgia, Kentucky

Categories: Training sessions, Availability of assistance when needed, Quality of assistance when requested (scale 1 to 10)

Recommendation: Program Elements

Identify multiple program strategies for meeting volunteer training and technical needs as they expand across the state.
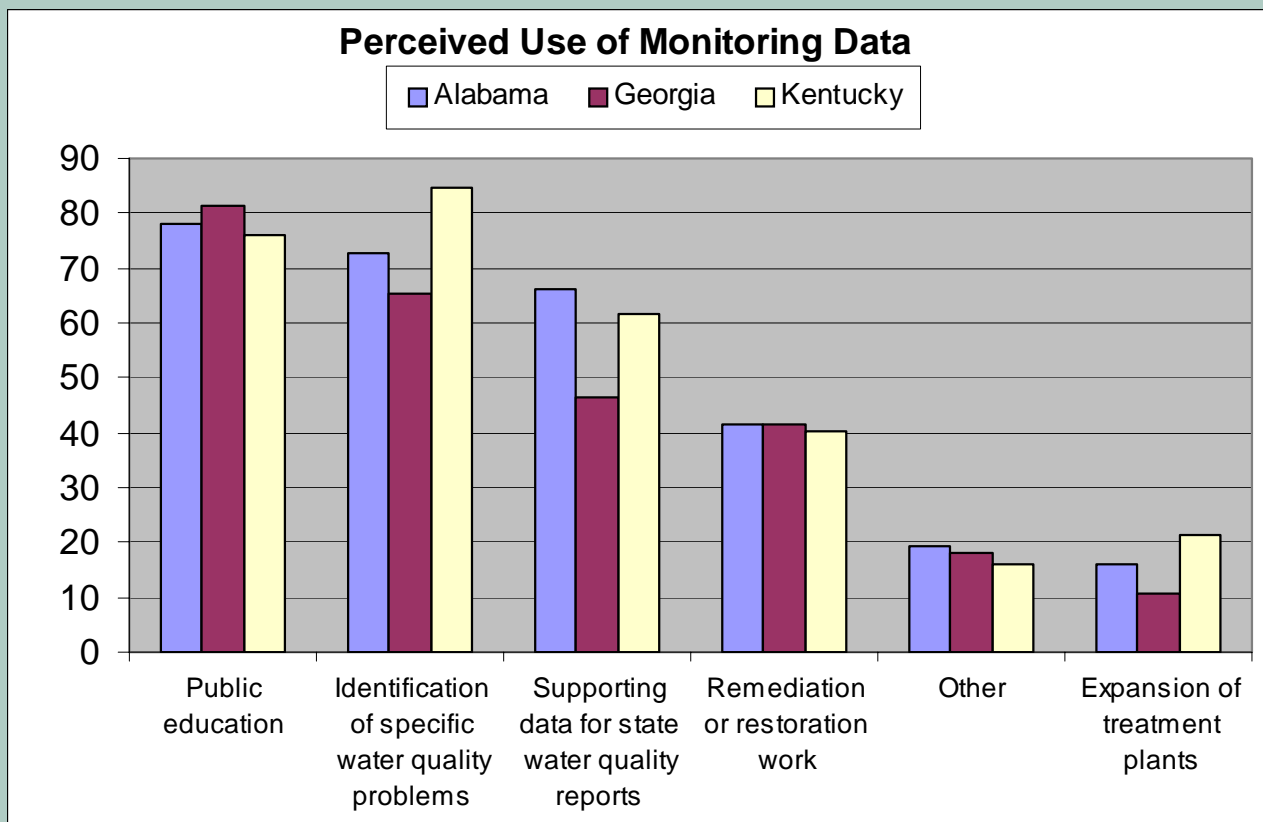

- **Case studies demonstrate the merits of using multiple strategies for meeting volunteer needs including the following approaches:**
  - Trained citizen volunteer monitors – all
  - State college & university system professors – GA AAS & KY
  - Community/watershed program coordinators – GA AAS
  - Cooperative Extension agents –AWW, GA AAS, & KY

Recommendation: Long-term viability

Seek and implement US EPA Region 4-approved Quality Assurance Project Plan (QAPP).

Perceived Use of Monitoring Data

Legend: Alabama, Georgia, Kentucky

Categories: Public education, Identification of specific water quality problems, Supporting data for state water quality reports, Remediation or restoration work, Other, Expansion of treatment plants

Literature reveals that to broaden how data is used QA/QC is key.

Recommendation: Long-term viability

Seek and implement US EPA Region 4-approved Quality Assurance Project Plan (QAPP).

AWW Case Study

- **Approach**
  - Identify quality data as intended programmatic outcome
  - Define potential data uses
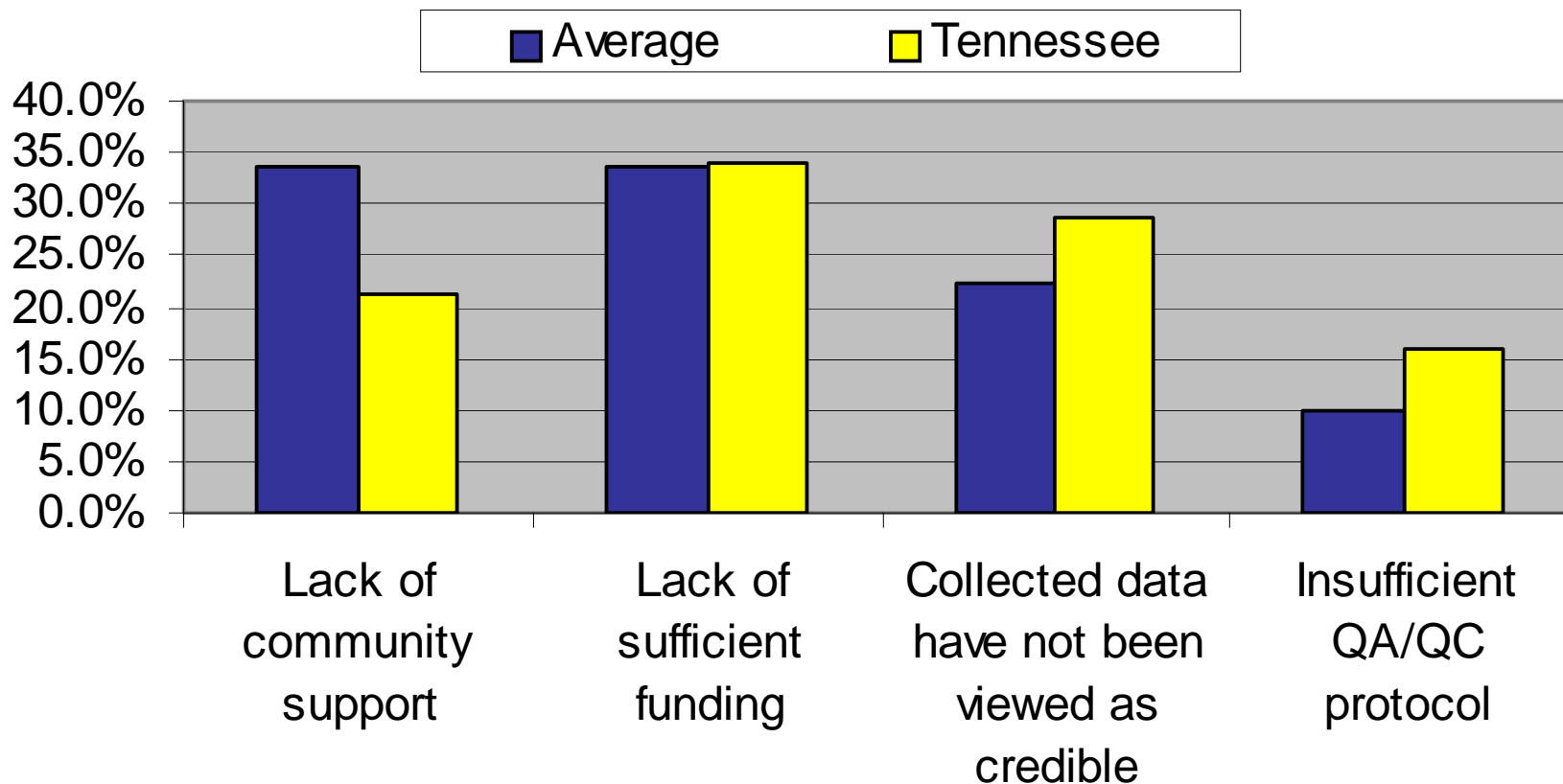 - Develop QAPP to support these uses in conjunction with state & EPA regional office
- **Benefits of a comprehensive QAPP**
  - Long-term acquisition of data
  - Increased data credibility with state environmental agency
  - Use of data in watershed planning & in corroborating agency-collected data (303d listing/ 305b report);
  - Greater clout to volunteer advocates

Tennesseans' Perceptions
Primary Limitations

Greatest Perceived Limitation

Recommendations by Topic & Category

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Potential Next Steps

- Convene stakeholder forum to consider viability of a TN Volunteer Monitoring Program

- Forum objectives could include:

  - Revisit recommendations

  - Consider strategies for implementing recommendations

  - Explore possible barriers to implementation & how to overcome them